

# **METHOD AND DEVICE FOR TRANSFERRING ARTICLES**

PCT 03-13-97 09709256 WO NDN- 172-0010-9254-5

**INVENTOR(S)**- GRETENER, Urs Treppenweg 18, CH-5300 Ennetburgi  
Switzerland

**INVENTOR(S)**- HEINZ, Beat Compardans, CH-7411 Sils im Domleschg  
Switzerland

**INVENTOR(S)**- RYKART, Ruedi Waltersholz 49, CH-5046 Schmidrued  
Switzerland

**APPLICANT(S)**- SIEMENS SCHWEIZ AG EP/Patente, Postfach, Albisriederstrasse  
245, CH-8047 Zurich Switzerland

**APPLICANT(S)**- GRAPHA-HOLDING AG Seestrasse 41, Postfach 170, CH-6052  
Hergiswil Switzerland

**APPLICANT(S)**- GRETENER, Urs Treppenweg 18, CH-5300 Ennetburgi  
Switzerland

**APPLICANT(S)**- HEINZ, Beat Compardans, CH-7411 Sils im Domleschg  
Switzerland

**APPLICANT(S)**- RYKART, Ruedi Waltersholz 49, CH-5046 Schmidrued  
Switzerland

**DATE FILED**- 1996-09-05

**PUBLICATION NUMBER**- 09709256 WO

**DOCUMENT TYPE**- A1

**PUBLICATION DATE**- 1997-03-13

**PATENT PRIORITY INFO**- 2560/95-, 1995-09-08, Switzerland

**ATTORNEY, AGENT, OR FIRM**- SIEMENS SCHWEIZ AG, EP/Patente, Postfach,  
Albisriederstrasse 245, CH-8047 Zurich, Switzerland

**INTERNATIONAL PATENT CLASS**- B65G; 47/31; 43/08

**PCT APP. NO.**- PCT/CH96/00305

**FILING LANGUAGE**- German

**LANGUAGE**- German

The method described controls the transfer of articles (FS) which are to be delivered within the shortest possible time by a delivery conveyor (AGF) to unoccupied places on a receiver conveyor (ANF). The receiver conveyor (ANF) moves at constant speed  $V_{\text{sub}}$  ANF (end sub) and makes an angle (small alpha, Greek) with the delivery conveyor (AGF) which is divided into at least a buffer belt (PB), an acceleration belt (AB; AB1, AB2) and a transfer belt (EB). The following parameters: the instantaneous speed  $v_{\text{sub}}$  UE (end sub) of an article at time  $t_2$ , the speed  $v_{\text{sub}}$  ES (end sub) at which the article has to be delivered, following acceleration, onto the transfer belt (EB), the measured length of the article  $l_{\text{sub}}$  FS (end sub), the length  $l_{\text{sub}}$  AB (end sub) of the acceleration belt (AB; AB1, AB2), at least approximately the length of the path  $(b_{\text{sub}} \text{ AB (end sub)} * \tan(\text{small alpha, Greek}))$  which the article (FS) has already covered, following the length measurement at time  $t_2$ , on the acceleration belt (AB; AB1, AB2) and the position of the next unoccupied place on the receiver belt (ANF) parameters

which can be measured and/or adjusted by a control unit (ST1, ST2), are used to determine the length of time  $t'_{\text{SYN}}$  during which the article (FS) with an acceleration  $a$  will have to be accelerated and decelerated, or decelerated and accelerated, in order that, when the article is delivered onto the transfer belt (EB), it is synchronized with the next unoccupied place on the receiving conveyor (ANF). The method and device proposed make it possible to reduce disruptive dead time in the transfer of articles of the same or different sizes. In addition, the method proposed brings about an acceleration of the transfer operation, calculated as a function of the position of the container into which an article is to be transferred and the size of the article, and makes it possible to synchronize the time of arrival of articles with that of unoccupied containers which, in prior art methods, would arrive too early and would travel past, unused, on the receiver conveyor.